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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,986	03/31/2004	Yun-Ho Jung	8733.657.10-US	5992
30827	7590	08/15/2005	EXAMINER	
MCKENNA LONG & ALDRIDGE LLP			SMOOT, STEPHEN W	
1900 K STREET, NW			ART UNIT	
WASHINGTON, DC 20006			PAPER NUMBER	

2813

DATE MAILED: 08/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/812,986

Applicant(s)

JUNG, YUN-HO

Examiner

Stephen W. Smoot

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 7-9, 11 and 24-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7, 9, 11, 24, 26-28 and 30-32 is/are rejected.
- 7) ☒ Claim(s) 8, 25 and 29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 10/157,201.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

This Office action is in response to applicant's amendment filed on 23 May 2005.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 7, 11, 24, 27-28, 31-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Sposili et al. (US 2004/0053450 A1).

Referring to Fig. 3 and paragraphs [0030] to [0078] Sposili et al. disclose a pattern (235) corresponding to a sequential lateral solidification mask (150 in Fig. 1) with slit-shaped beamlets (255, 265) (i.e. light transmitting portions) for shaping a laser beam. The beamlets (255, 265) are 3  $\mu\text{m}$  wide and are separated by corresponding shadow regions (257, 267) (i.e. light blocking portions) that are 1.5  $\mu\text{m}$  wide. The

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opposing edges of the beamlets (255, 265) include abrupt interfaces between light blocking and light transmitting portions of the mask that are capable of generating interference and scattering of the laser beam. Referring now to Figs. 5A-5D, portions of a silicon thin film (52 in Fig. 1) corresponding to the beamlets (255, 265) of the mask are melted through exposure to the laser beam and are then crystallized to form laterally grown grains that are about 1.5  $\mu\text{m}$  wide as shown in Fig. 5B. Through a subsequent exposure of the shadowed portions of the silicon thin film to the laser beam, the grains are grown wider until they bridge the 1.5  $\mu\text{m}$  gap corresponding to the formerly light blocked portions (i.e. to a maximum width of about 2.25  $\mu\text{m}$ ).

These are all of the limitations set forth in claims 7, 11, 24, 27-28, 31-32 of the applicant's invention.

3. Claims 24, 28, 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Voutsas et al. (US 6,573,163 B2).

Referring to Figs. 1, 2 and column 3, line 66 to column 5, line 20, Voutsas et al. (US 6,573,163 B2) disclose a mask (18) with rectangular slits (29, 31) for projecting an image from a laser source (12) onto a substrate (16) using a laser beam (14). The opposing edges of the slits (29, 31) include abrupt interfaces between light blocking and light transmitting portions of the mask that are capable of generating interference and scattering of the laser beam (14). Referring to Figs. 3-5, the projected image (36) corresponding to a slit is advanced across a silicon region (34) while exposing with laser pulses to form a region (40) of elongated silicon crystals (i.e. laterally grown grains) that

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are clearly more than 3.5 times the width of the projected image (36) as shown in Fig. 5. Even when considering the possibility that the projected image (36) may have a 7x reduction relative to the features of the mask, the width of a slit would still be less than twice the length of these elongated crystals.

These are all of the limitations set forth in claims 24, 28, 32 of the applicant's invention.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 9, 26, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sposili et al. (US 2004/0053450 A1) as applied to claims 7, 24, 28 above, respectively, and further in view of Uchida (JP 62-026884 A – from applicant's IDS).

As shown above, Sposili et al. (US 2004/0053450 A1) anticipate claims 7, 24, 28 of the applicant's invention. However, Sposili et al. (US 2004/0053450 A1) lack the further limitation to claims 7, 24, 28 respectively set forth in claims 9, 26, 30 of the applicant's invention, which is a mask with stripe shaped light-transmitting portions that

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have semicircular shaped edges. Uchida teaches a strip-shaped mask with ends that are configured to be semicircular in shape (see abstract).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Sposili et al. (US 2004/0053450 A1) and Uchida in order to round the edges of the slits taught by Sposili et al. (US 2004/0053450 A1) into a semicircular shape as taught by Uchida. Uchida recognizes that the semicircular shape of the edges improves the optical cracking level of crystals that are exposed with a laser beam.

### ***Allowable Subject Matter***

6. Claims 8, 25, 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: Claims 8, 25, 29 would be allowable because the prior art of record does not teach or suggest, in combination with the other claim limitations, a sequential lateral solidification mask that includes a plurality of stripe-shaped light transmitting portions for passing a laser beam, wherein each light transmitting portion includes triangular shaped edges on both sides.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 7, 9, 11 (see pages 6-8 of the amendment filed on 23 May 2005) have been considered but are moot in view of the new grounds of rejection.

### ***Conclusion***


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen W. Smoot whose telephone number is 571-272-1698. The examiner can normally be reached on M-F (8:00 am to 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8000.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SWS

  
**STEPHEN W. SMOOT**  
**PRIMARY EXAMINER**